Claims

1. A method for modifying microparticles comprising the steps of:
- providing a gelatinous carrier medium in which microparticles are embedded;
- introducing at least one component into the gelatinous carrier medium and bringing the at least one component into contact with the microparticles by means of induced, directional transport, with the at least one component exhibiting a mobility in the gelatinous carrier medium which is higher than that of the microparticles;
- modifying the microparticles with the at least one component; and removing the modified microparticles from the gelatinous carrier medium.

2. The method as claimed in claim 1, characterized in that the gelatinous carrier medium is a solid gel.

3. The method as claimed in claim 1 or 2, characterized in that the provision of the gelatinous carrier medium comprises the steps of:
- providing the carrier medium in a low-viscosity form;
- introducing microparticles into the carrier medium; and
- increasing the viscosity of the carrier medium such that the mobility of the microparticles in the carrier medium is restricted.

4. The method as claimed in claim 3, characterized in that the viscosity of the carrier medium is increased by converting the carrier medium into a gelatinous state or into a solid gel.

5. The method as claimed in one of claims 1 to 4, characterized in that
the viscosity of the carrier medium is increased by means of the carrier medium undergoing a reversible sol-gel transition.

6. The method as claimed in claim 5, characterized in that
the carrier medium is a gel which is liquefied by heating for the purpose of introducing the microparticles and is cooled down once again, for solidification, after the microparticles have been introduced.

7. The method as claimed in claim 5, characterized in that
the carrier medium is a gel which is liquefied by adding a dispersing agent for the purpose of introducing the microparticles and the dispersing agent is at least partially removed once again, for solidification, after the microparticles have been introduced.

8. The method as claimed in one of the preceding claims, characterized in that
the modification of the microparticles comprises
- coating the microparticles with the at least one component, and/or
- using the at least one component to disintegrate microparticles which are coated with a shell, resulting in the formation of hollow structures, and/or
- introducing and/or concentrating the at least one component into/in the microparticle(s).

9. The method as claimed in one of the preceding

claims,
characterized in that
the removal of the modified microparticles from the gelatinous carrier medium is effected by lowering the viscosity of the carrier medium and separating off the modified microparticles from the carrier medium.

10. The method as claimed in claim 9,
characterized in that
the viscosity of the carrier medium is lowered by means of the carrier medium undergoing a gel-sol transition.

11. The method as claimed in claim 9 or 10,
characterized in that
the viscosity is lowered by heating the carrier medium.

12. The method as claimed in claim 9 or 10,
characterized in that
the viscosity is lowered by adding a dispersing agent.

13. The method as claimed in one of the preceding claims,
characterized in that
the removal of the modified microparticles from the gelatinous carrier medium is effected by decomposing the carrier medium and separating off the modified microparticles from the decomposed carrier medium.

14. The method as claimed in one of the preceding claims,
characterized in that
the microparticles are smaller than 30 micrometers, in particular smaller than 5 micrometers, particularly preferably smaller than 1 micrometer.

15. The method as claimed in one of the preceding claims,
characterized in that

the microparticles are of biological or bio-technological origin.

16. The method as claimed in one of the preceding claims,
characterized in that
the microparticles belong to the group of inorganic or organic colloidal particles, such as silica particles or organic polymeric colloids.

17. The method as claimed in one of the preceding claims,
characterized in that
the microparticles contain an active compound.

18. The method as claimed in one of the preceding claims,
characterized in that
the microparticles employed are disintegratable or soluble particles.

19. The method as claimed in one of the preceding claims,
characterized in that
the microparticles possess catalytic properties.

20. The method as claimed in one of the preceding claims,
characterized in that
the components required for the coating comprise water-soluble organic polymers.

21. The method as claimed in one of the preceding claims,
characterized in that
the component used for coating the microparticles comprises pharmaceutical or cosmetic active compounds.

22. The method as claimed in one of the preceding claims,
characterized in that
the component used for coating the microparticles comprises at least one inorganic substance or inorganic nanoparticles.

23. The method as claimed in claim 22,
characterized in that
the component used for coating the microparticles comprises inorganic polyelectrolytes.

24. The method as claimed in claim 22 or 23,
characterized in that
the inorganic component and nanoparticles used for coating the microparticles possess catalytic properties.

25. The method as claimed in one of the preceding claims,
characterized in that
the component used for coating the microparticles comprises water-soluble organic polyelectrolytes such as polymeric colloids or charged supramolecular structures such as dendrimers, or complexes composed of polyelectrolytes and surfactants or complexes composed of polyelectrolytes with each other.

26. The method as claimed in one of the preceding claims,
characterized in that
the component used for coating the microparticles is of biogenic or biotechnological origin, such as viruses, bacteria, blue algae, unicellular organisms, animal cells, liposomes, vesicles, cell organelles, membrane fragments and biopolymers such as proteins, nucleic acids and carbohydrates.

27. The method as claimed in one of the preceding claims,
characterized in that
the component used for coating the microparticles is labeled with dyes, fluorescent dyes, magnetic or electrical labels, labels for spectroscopic and photographic methods and/or labels for biochemical or mass spectroscopic methods.

28. The method as claimed in one of the preceding claims,
characterized in that
the microparticles are coated consecutively with at least two components for the purpose of forming a shell which comprises at least two layers.

29. The method as claimed in claim 28,
characterized in that
the microparticles are coated with at least one further component for the purpose of forming a shell comprising at least three layers.

30. The method as claimed in one of the preceding claims,
characterized in that
the microparticles are hollow particles having a shell which is constructed in layers.

31. The method as claimed in claim 30,
characterized in that
the at least one component is introduced into the hollow particles.

32. The method as claimed in one of the preceding claims,
characterized in that
the carrier medium is composed of organic polymers such as gelatin; biopolymers such as collagen, proteins,

lipoproteins or glycoproteins; polyacrylamide, charged carbohydrates and their derivatives such as chitosan, pectinate, alginate or agarose; gums such as gum arabic; or synthetic polymeric hydrogel-forming agents.

33. The method as claimed in one of the preceding claims,
characterized in that
after the microparticles have been modified, the carrier medium is first of all comminuted and then decomposed and/or its viscosity is reduced.

34. A device for modifying microparticles having a first and a second chamber (2, 12) which can in each case be filled with a liquid, with the two chambers (2, 2) being delimited from each other by a gelatinous carrier medium (4) between them,
with
the distance (20) between the two chambers (2, 12) being defined by the thickness of the gelatinous carrier medium (4),
the gelatinous carrier medium (4) forming a contact area (9, 19) with each chamber (2, 12)
and
the extent of at least one contact area (9, 19) being greater, in at least one direction, than the distance (20) between the two chambers.

35. The device as claimed in claim 34,
characterized in that
the extent of each contact area (9, 19) is greater, in all directions, than the distance (20) between the two chambers.

36. The device as claimed in claim 34 or 35,
characterized in that
on their sides which are in each case facing away from the intercalated gelatinous carrier medium (4), the two

chambers (2, 12) are in each case delimited by at least one membrane (6, 16) which is in each case opposite a first and, respectively, second functional chamber (7, 17).

37. The device as claimed in claim 36, characterized in that each membrane (6, 16) has approximately the same extent as the contact areas (9, 19) between the gelatinous carrier material (4) and the two chambers 2, 12).

38. The device as claimed in claim 36 or 37, characterized in that each functional chamber (7, 17) can be filled with a liquid and contains at least one electrode (8, 18).

39. The device as claimed in claim 38, characterized in that the electrodes (8, 18) are designed as plates in connection with which they are arranged essentially parallel to the inserted gelatinous carrier medium (4).